EXHIBIT #12: Inventory Listing of Argentine Levee Pump Stations and Outlets/Drainage Structures

Argentine Levee Unit PUMP PLANTS				
Name / Station (ft) or Location	Design Flood Elevation (ft)	Contributing Flows	River Discharge Conduit(s)	Comments
Turner Station (Kaw Valley Pump No. 4) / 60+40 (42+41[1])	776.8	(1) Storm Sewer System Flow: The delivery system is a closed sewer paralleling Kansas State Hwy. 132 to the north. (2) Seepage Flow: Service area is between Sta. 68+00 to Sta. 156+00, totaling 13.4 cfs, currently ponds in undrained sites.	Twin 5'x8' RCB	A. The extra room for future pumping capacity was accounted for in the original design. B. The original sewer system was designed to serve 434 acres and assumed that area to be fully developed. B. Stage 20.0 ft is when the pumping is initiated, which is the point when the HGL is 3 ft below then lowest MH. C. It was determined that the whole drainage area would not contribute to the peak runoff. D. Time of concentration was based upon the 434 acre tract serviced by the sewer system, not the total area. E. The Bulk Mail center has been built in this area and services a portion of the original 625 acres. 625 acres has been reduced to approximately 594 acres. This might have alleviated any burden that the extra impervious area would have caused. The percent impervious was estimated from 1996 aerial photography. F. Two pumps were added (outside) in the 1980s.
Bulk Mail / 131+50 PRIVATE Noncompensable	774.7	Storm Runoff	48" CIP	A. This pump plant services the Post Office property. B. The plant was not analyzed in the overall hydrology within the "Supplement on Interior Drainage". C. The pump plant is owned and operated by the Post Office. D. The percent impervious was estimated by visual inspection of 1996 aerial photography. E. The drainage district sponsor explained that this pump is not critical to the integrity of the levee. If the Bulk Mail pump was to go off-line the water would pond on the Bulk Mail Center property and some runoff would flow to the Turner Pump Station. The Turner Station would be able to handle the small amount of additional runoff contributed by the Bulk Mail Center because this area was originally designated to contribute to the Turner Station.
ConAgra / 145+00 PRIVATE Noncompensable	774.5	Storm Runoff	36" RCP	A. This pump plant services what used to be the Swift Packing Company property - it is now ConAgra. B. The plant was not analyzed in the overall hydrology within the "Supplement on Interior Drainage". C. The pump plant is owned and operated by ConAgra. D. The percent impervious was estimated by visual inspection of 1996 aerial photography. E. The drainage district sponsor explained that this pump is not critical to the integrity of the levee. If pump was to go off-line the water would pond on the ConAgra property. Some runoff would flow to the Turner Pump Station. The Turner Station would be able to handle the small amount of addition runoff contributed by the ConAgra land because this area was originally designated to contribute to the Turner Station.
Argentine / 253+14 (242+97[1])	771.6	Storm Sewer System Flow: This collects local runoff, which is collected in two separate ditches. Main ditch collects water from the uplands. The North ditch collects water from the bottoms.	9.5'x9' RCB	A. The sewer and ditch system that services this area has sufficient capacity up to the confluence of the North Santa Fe Ditch and The Main Santa Fe Ditch. At this confluence point the maximum runoff of 2029 cfs at stage 14.0 is too great for a conduit that only has a maximum capacity of 790 cfs. B. The conduit mentioned in comment "A" is a continuous composite conduit. The inlet is an 11' x 8' RCB that leads into a 9.5'x9 RCB which ties into the pump station. C. Ponding that occurs under the pumping conditions is less then the ponding that occurs unavoidably under gravity flow conditions at stage 14.0. Therefore, extra pumping capacity will not solve the most severe ponding condition. D. Gravity flow capacity equals pumping capacity at stage 26 (752.8), yet the gates must be closed at stage 23.6 (elev. 750.8) to prevent backflow from the Kansas River inundating the catch basins near 23rd & Argentine. E. The service area has been reduced by 134 acres due to the construction of the Ruby Street Sewe F. One new pump was added to this station in recent years, located just outside the pump house.

Note: Unless shown otherwise, stages given refer to the Kansas City gage on the Hannibal Bridge at Missouri River mile 366.1 using the original datum of 715.79. This original datum was in use from February, 1948 to October, 1989, when the current datum of 706.4 went into effect. Elevations in the table correspond to the river at the pump plant location.

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Superscript 1 refers to 1950 levee stationing.

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Santa Fe Yards / 253+36 (248+19[1]) PRIVATE Compensable	771.4	Storm Sewer System Flow: Runoff from the southeast portion of the RR yards, a small amount of nearby residential runoff, and a small amount of over flow from the Strong Ave. Sewer.	4'x5' RCB	A. Ponding occurs at the inlet of the 36" pipe, point 16 (see 1950 "Supplement on Interior Drainage" plate 33) that passes underneath the tracks and drains a low area south of the tracks. The 36" pipe drains the bypass flow from the Strong Ave Sewer. B. Ponding occurs near the rail car repair shop at MH #22 and #23. (see 1950 "Supplemental on Interior Drainage" plate 33) C. At the turntable, ponding is 1.5 ft due to the lack of sewer capacity. This ponding could easily be prevented by installing a 12" flap gate on the 12" line in manhole 57 (see 1950 "Supplement on Interior Drainage" plate 33). D. During the site visit interview, the team was told there is a significant amount of ponding due to the lack of pumping capacity of this plant. The Santa Fe Railroad, pumps all storm drainage on their property to a holding tank. The water is held in the tank to separate the oil (diesel fuel) from the water. The water is then pumped into the Kansas City Kansas sanitary sewer system. Santa Fe railroad no longer gravity discharges to the river. The option to discharge to the river is still available, but is not done unless absolutely necessary.
Strong Ave. / 273+41 (263+21[1])	771.1	Storm Sewer System Flow: Flow from a residential area south and west of the railroad yards.	84" RCP	A. The analysis in the 1950 "Supplement on Interior Drainage" shows that gravity discharge out performs pump discharge when the river stage is below 23.0 ft. Therefore, it was suggested to start the pumping at stage 23.0 instead of stage 16.0. B. The original pump plant had only one 16" centrifugal sewage pump, which was insufficient to pump the QSystem Capacity. Yet due to the extreme insufficient capacity of the sewer system it was shown that increasing the pump capacity would not solve the ponding problem, because the most extreme ponding occurred under gravity flow conditions. This is probably why the Ruby Street Sewer system was constructe C. The City of KCK, in the 1990s, constructed a pump station at 26th and Strong Avenue. At some stage of a design rainfall event, storm water is diverted from the Strong Avenue sewer to the Ruby Avenue storm sewer. The Strong Ave. Sewer has been made to be predominately a sanitary sewer with the construction of the Ruby Street Sewer system (which now collects the majority of the storm runoff that originally was collected by the Strong Ave. Sewer) and added the connection to the 16th Street Sanitary Sewer. D. The service area has been reduced in size from 607 to 175 acres since its original design. E. An 18" Cascade pump was installed in 1995. It is believed to replace the function of the 16" Worthington pump. The 18" pump is cited to have a capacity of 8000 gpm @ 39.5' TDH. The 16" was cited to have only 6000 gpm at the same TDH; therefore the capacity has increased. (see the pump curve found in the 1950 "Supplement on Interior Drainage", plate 43)

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Superscript 1 refers to 1950 levee stationing.

EXHIBIT #12